CLAIMS

1. A radio communication system using TDMA (Time Division Multiple Access) radio communication for dividing a predetermined time interval (hereinafter, referred to as a frame) into N time slots and performing communication of independent signals at each of the time slots,

wherein the radio communication system comprises a master station and one or more slave stations,

wherein the master station divides a transmission signal into signals having a one-time-slot transmittable length and transmits the divided transmission signals multiple times repeatedly at M time slots ($1 \leq M \leq N$) including a time slot for transmitting a control signal, and

wherein the slave station performs reception of the M time slots for transmitting the transmission signal by the master station to receive one divided transmission signals in synchronization with the control signal transmitted by the master station.

2. The radio communication system according to Claim 1,

wherein the master station transmits a broadcast signal for notifying information on the time slot used to

transmit the transmission signal, and

wherein the slave station receives the broadcast signal and determines a time slot for receiving the transmission signal.

3. The radio communication system according to Claim 2, wherein the master station transmits the broadcast signal instead of the control signal or together with the control signal at the time slot for transmitting the control signal.

4. The radio communication system according to any one of Claims 1 to 3, wherein the master station transmits the divided transmission signal instead of the control signal or together with the control signal at the time slot for transmitting the control signal when the transmission signal is transmitted.

5. The radio communication system according to any one of Claims 1 to 4, wherein the communication is performed using a frequency hopping scheme.

6. The radio communication system according to Claim 5, wherein hopping sequences used at the M time slots for transmitting the transmission signal are selected as at

least two different hopping sequences.

7. A radio communication method used for a radio communication system using TDMA (Time Division Multiple Access) radio communication for dividing one frame having a predetermined time interval into N time slots and performing communication of independent signals at each of the time slots,

wherein the radio communication system comprises a master station and one or more slave stations,

wherein in the master station, the method comprises:

a step of dividing a transmission signal into signals having a one-time-slot transmittable length; and

a step of transmitting the divided transmission signals multiple times repeatedly at M time slots ($1 \leq M \leq N$) including a time slot for transmitting a control signal, and

wherein in the slave station, the method comprises:

a step of synchronizing with the transmitted control signal;

a step of receiving the transmission signal of the M time slots transmitted by the master station;

a step of receiving one divided transmission information.

8. A radio communication system using time division multiple access radio communication for dividing one frame having a predetermined time interval into N time slots and performing communication of independent signals at each of the time slots,

wherein the radio communication system comprises a first radio communication station and one or more second radio communication stations,

wherein the first radio communication station divides a transmission signal into signals having a one-time-slot transmittable length and transmits the divided transmission signals multiple times repeatedly at M time slots ($1 \leq M \leq N$), and

wherein the second radio communication station performs reception of the M time slots transmitted by the first radio communication station to receive one divided transmission signals multiple times.

9. The radio communication system according to Claim 8,

wherein the first radio communication station transmits a broadcast signal for notifying information on the time slot used to transmit the transmission signal, and

wherein the second radio communication station receives the broadcast signal and determines a time slot

for receiving the transmission signal.

10. The radio communication system according to Claim 8 or 9,

wherein the second radio communication station transmits a signal for directing times of transmitting the transmission signal to the first radio communication station, and the first radio communication station changes the times of transmitting the transmission signal in response to the signal.

11. The radio communication system according to Claim 8 or 9,

wherein the second radio communication station transmits a signal for increasing times of transmitting the transmission signal to the first radio communication station, and the first radio communication station increase the times of transmitting the transmission signal in response to the signal, and

wherein, when communication between the first radio communication station and the second radio communication station ends, the transmission times of the second radio communication station is returned to a predetermined value.

12. The radio communication system according to any one of Claims 8 to 10, wherein the communication is performed using a frequency hopping scheme.

13. The radio communication system according to Claim 12, wherein hopping sequences used at the M time slots for transmitting the transmission signal are selected as at least two different hopping sequences.

14. A radio communication method of transmitting data from a first radio communication station to one or more second radio communication stations by using time division multiple access radio communication for dividing one frame having a predetermined time interval into N time slots and performing communication of independent signals at each of the time slots,

wherein in the first radio communication station , the method comprises:

a step of dividing a transmission signal into signals having a one-time-slot transmittable length; and

a step of transmitting the divided transmission signals multiple times repeatedly at M time slots ($1 \leq M \leq N$), and

wherein in second radio communication station, the method comprises:

a step of performing reception of the M time slots transmitted by the first radio communication station; and

a step of receiving one divided transmission signals multiple times.

15. A radio communication system using TDMA-TDD (Time Division Multiple Access Time Division Duplex) radio communication for dividing one frame having a predetermined time interval into N time slots and performing communication of independent signals at each of the time slots,

wherein the radio communication system comprises a master station and one or more slave stations,

wherein, when 1:1 duplex communication between the master station and the slave station is performed, the master station performs TDMA-TDD radio communication using two time slots having a predetermined positional relation in the frame, and when simplex communication from the master station to the one or more slave stations is performed, the master station divides a transmission signal into signals having a one-time-slot transmittable length and performs TDMA radio communication using M time slots ($1 \leq M \leq N$) including a time slot having a predetermined positional relation with the time slot for transmitting the control signal to transmit the divided

transmission signals multiple times repeatedly, and

wherein the slave station performs reception of the M time slots for transmitting the transmission signal by the master station to receive one divided transmission signals.

16. The radio communication system according to Claim 15,

wherein the master station transmits a broadcast signal for notifying information on the time slot used to transmit the transmission signal, and

wherein the slave station receives the broadcast signal and determines a time slot for receiving the transmission signal.

17. The radio communication system according to Claim 15 or 16, wherein the communication is performed using a frequency hopping scheme.

18. The radio communication system according to Claim 17, wherein hopping sequences used at the M time slots for transmitting the transmission signal are selected as at least two different hopping sequences.

19. The radio communication system according to Claim 1, wherein the transmission signal is image information.

20. The radio communication system according to Claim 8, wherein the transmission signal is image information.

21. The radio communication system according to Claim 15, wherein the transmission signal is image information.

22. The radio communication method according to Claim 7, wherein the transmission signal is image information.

23. The radio communication method according to Claim 14, wherein the transmission signal is image information.

24. A door phone system comprising:

a base station for transmitting image information; and

an extended base station for receiving the image information,

wherein the base station comprises:

a radio unit for dividing a predetermined time interval (hereinafter, referred to as a frame) into N predetermined times (hereinafter, referred to as a time slot) and performing communication at each of the time slots by using a TDMA scheme;

storage means having an interface for inputting image

information, the storage means for storing the input image information; and

control means for performing a control process of dividing the image information stored in the storage means into data transmitted at the one time slot, designating order numbers to the divided data, and transmitting the order numbers and the divided image information multiple times repeatedly at M time slots ($1 \leq M \leq N$), and

wherein the extended base station comprises:

a radio unit for dividing the frame into the time slots and performing communication using the TDMA scheme at each of the time slots;

display means for displaying the received image information; and

control means for performing a control process of performing reception at the M time slots, discarding redundantly-received image information, and displaying the received image information on the display means.

25. The door phone system according to Claim 24,

wherein the base station notifies information on the time slot used to transmit the image information, and

wherein the extended base station receives the broadcast signal and the image information.

26. The door phone system according to Claim 24 or 25,

wherein the base station transmits a control signal synchronized with the time slot, and

wherein the extended base station receives the control signal and performs communication in synchronization with the base station.

27. The door phone system according to Claim 26, wherein, when the image information is transmitted, the base station performs transmission of the image information at the M time slots including at least one of a time slot for transmitting the control signal and a time slot having a predetermined positional relation with the time slot for transmitting the control signal.

28. The door phone system according to Claim 26, wherein the base station transmits the broadcast signal at least one times instead of the control signal or together with the control signal at the time slot for transmitting the control signal.

29. The door phone system according to any one of Claims 24 to 28, wherein times of transmitting the image information from the extended base station to the base

station is directed, and the base station changes the times of transmitting the image information in accordance with the directed times.

30. The door phone system according to any one of Claims 24 to 29, wherein the communication is performed using a frequency hopping scheme.

31. The door phone system according to Claim 30, wherein hopping sequences used at the M time slot for transmitting the image information are selected as at least two different hopping sequences.